



Virginia Information Technologies Agency



Elevation Framework Initiative Action Team

John Scrivani
Geospatial Projects Manager

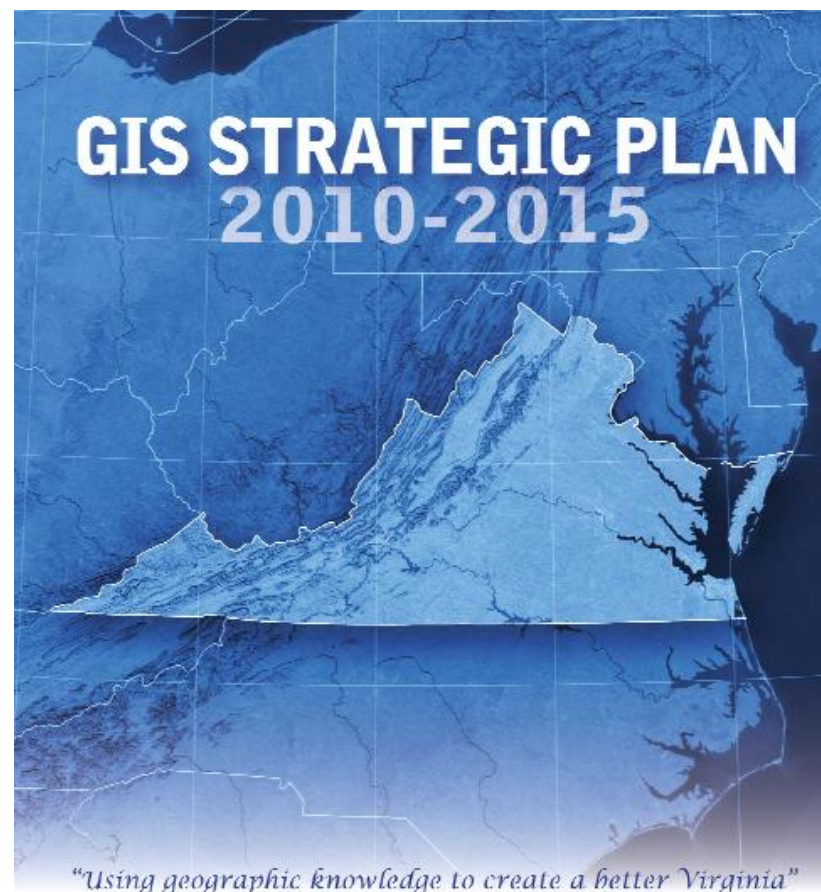
*VGIN Board Meeting
May 20, 2010*



Elevation FIAT

- From recently adopted 2010-2015 strategic plan
- Implements

*Initiative 5 – Provide
framework data layers*



FIAT Lifecycle



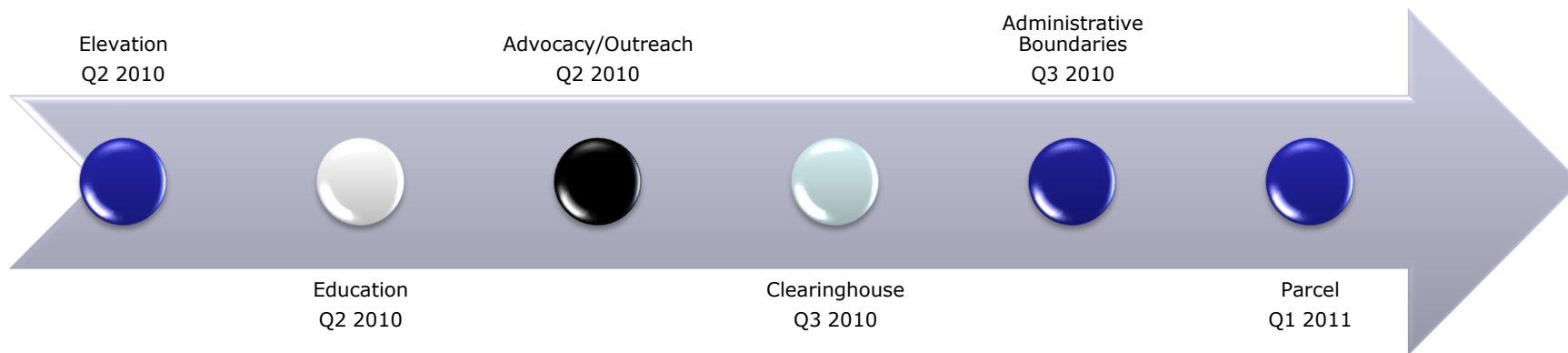
1. *Publish call for participation*
2. **Establish membership and charter**
3. Develop prioritized work plan
4. Work the plan
5. Report progress to VGIN Board through VGIN Coordinator
6. Close out workgroup when complete

Standards

- Developed by each FIAT for their particular theme.
- General approach is to start at a high level, simple statewide data standard that provides:
 - 1) a method for localities and state agencies to share minimum, essential data, and
 - 2) a standard that will provide the mechanism for clearinghouse inputs and outputs connectivity.

The objective is to be able to move fairly quickly with a state standard for practical use in the clearinghouse.

Proposed Strategic Planning Schedule



Agenda

- 10:00 am Welcome *Dan Widner, VGIN Coordinator*
- 10:05 am The Elevation FIAT – Process Overview, *John Scrivani, VGIN*
- 10:15 am LiDAR Technology & Products, *Brian Mayfield, Dewberry*
- 10:45 am FEMA Flood Mapping & Elevation Needs, *Jon Janowicz, FEMA*
- 11:15 am Roundtable Discussion of Elevation Needs in Virginia (*all*)
- 11:45 am Lunch (on your own)
- 1:00 pm USGS and the National Elevation Dataset, *USGS*
- 1:30 pm Visualizing and Using LiDAR Data, *Rick Vincent, Sanborn*
- 2:00 pm FIAT Charter and Next Steps (*all participants*)
- 3:00 pm Adjourn

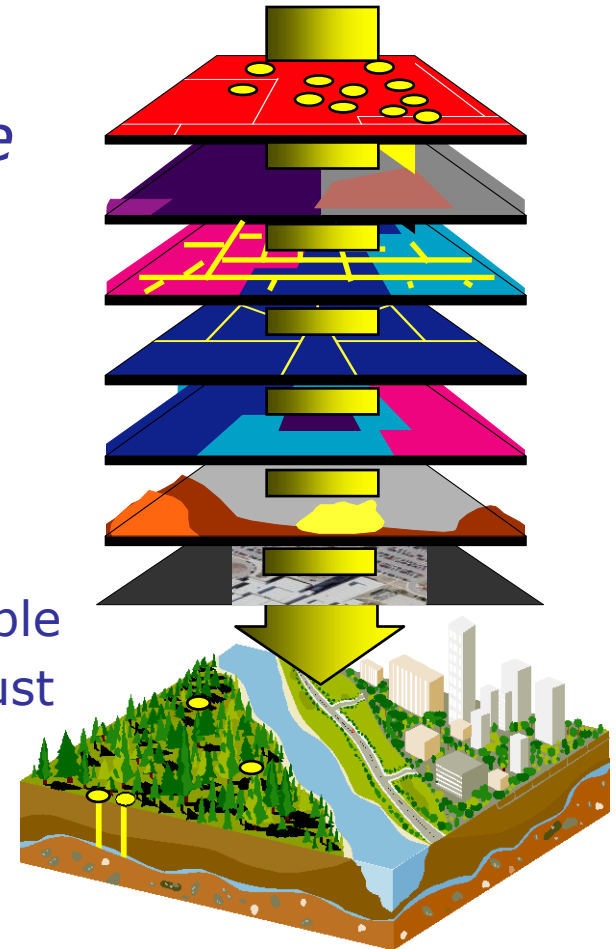
Framework Layers

"themes of geospatial data that are used by most GIS applications"

OMB Circular A-16

Framework layers are:

- Needed for many diverse purposes
- Needed across all jurisdictions
- Needed to be standardized and compatible
- Too expensive to be created and used just once
- Amenable to economies of scale



OMB A-16 Definition

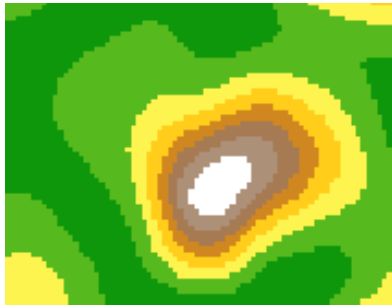
Elevation Terrestrial:

This data contains georeferenced digital representations of terrestrial surfaces, natural or manmade, which describe ***vertical position above or below a datum surface***. Data may be encapsulated in an evenly spaced grid (raster form) or randomly spaced (triangular irregular network, hypsography, single points). The elevation points can have varying horizontal and vertical resolution and accuracy.

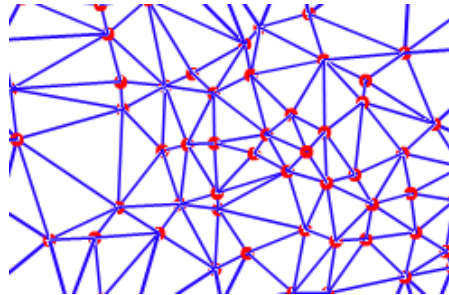


Elevation data forms

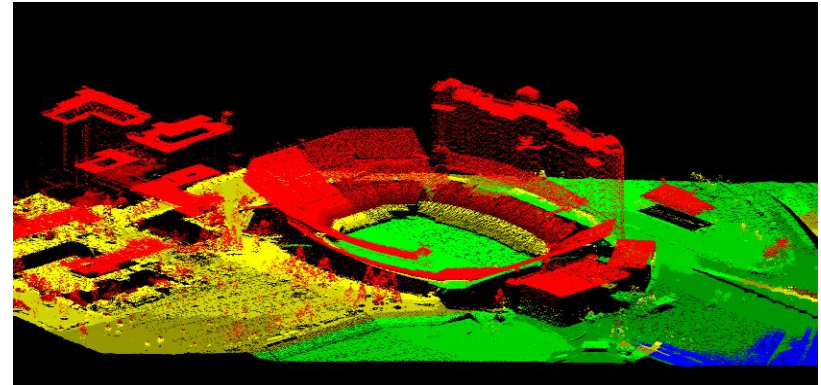
Raster DEM



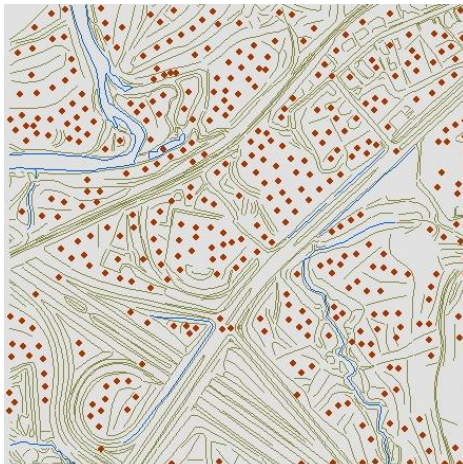
TIN



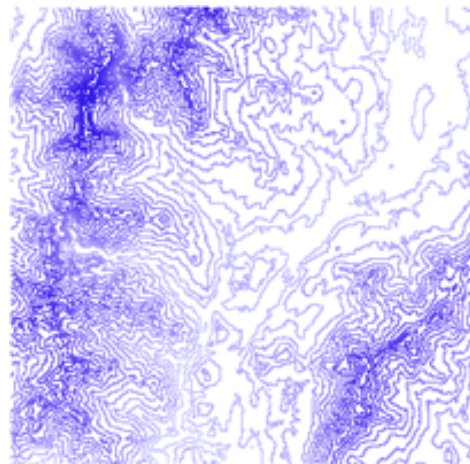
Point Clouds



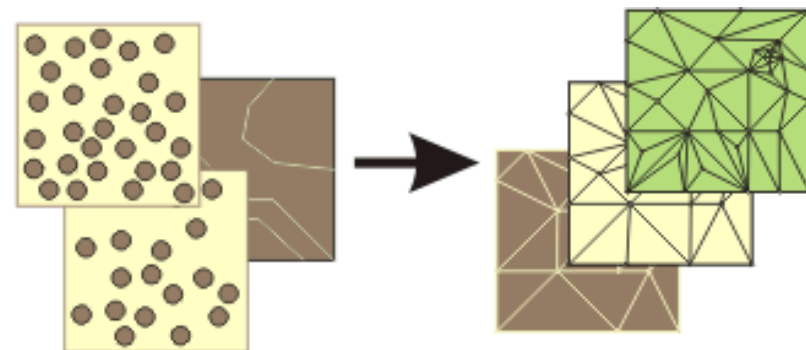
DTM



Contours

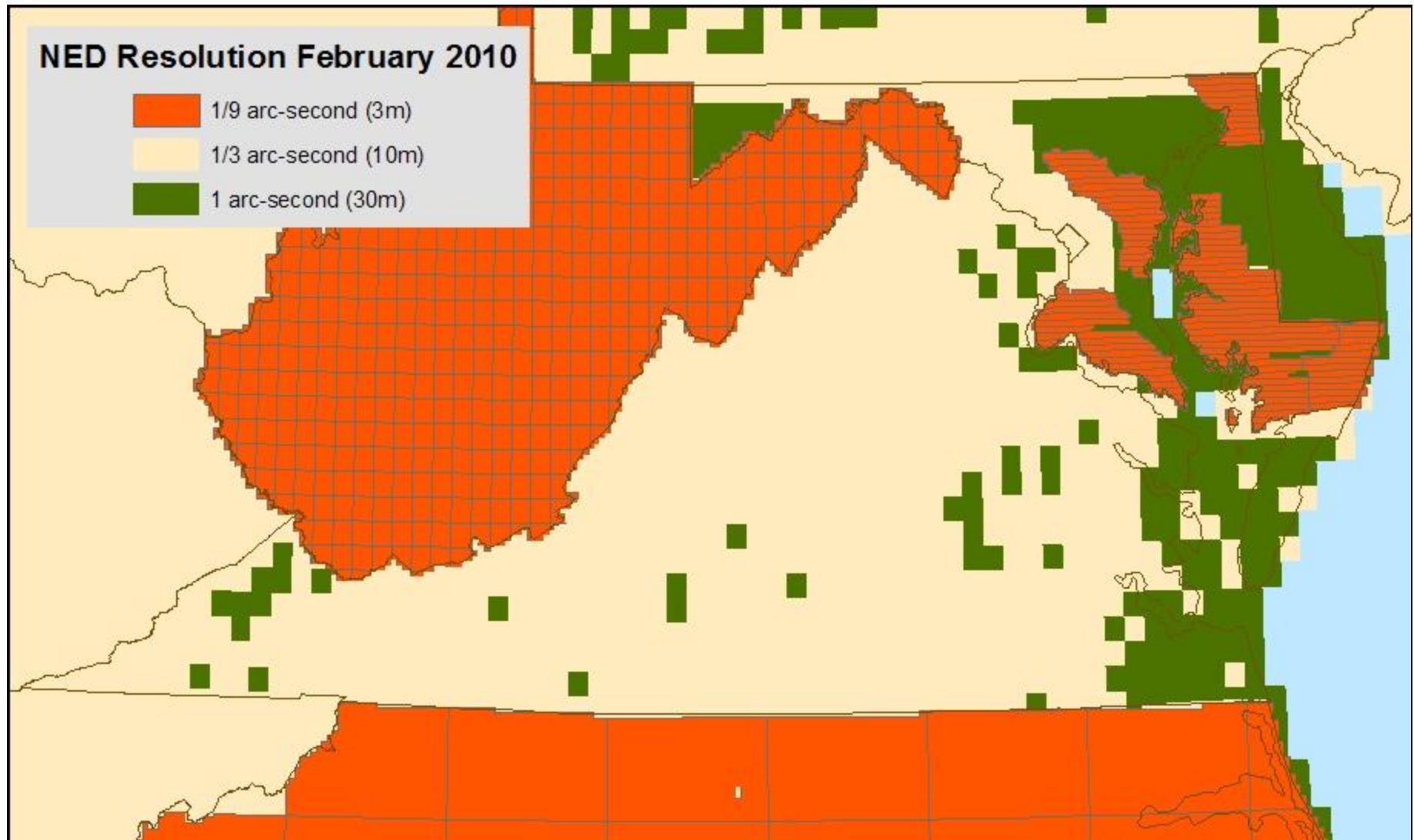


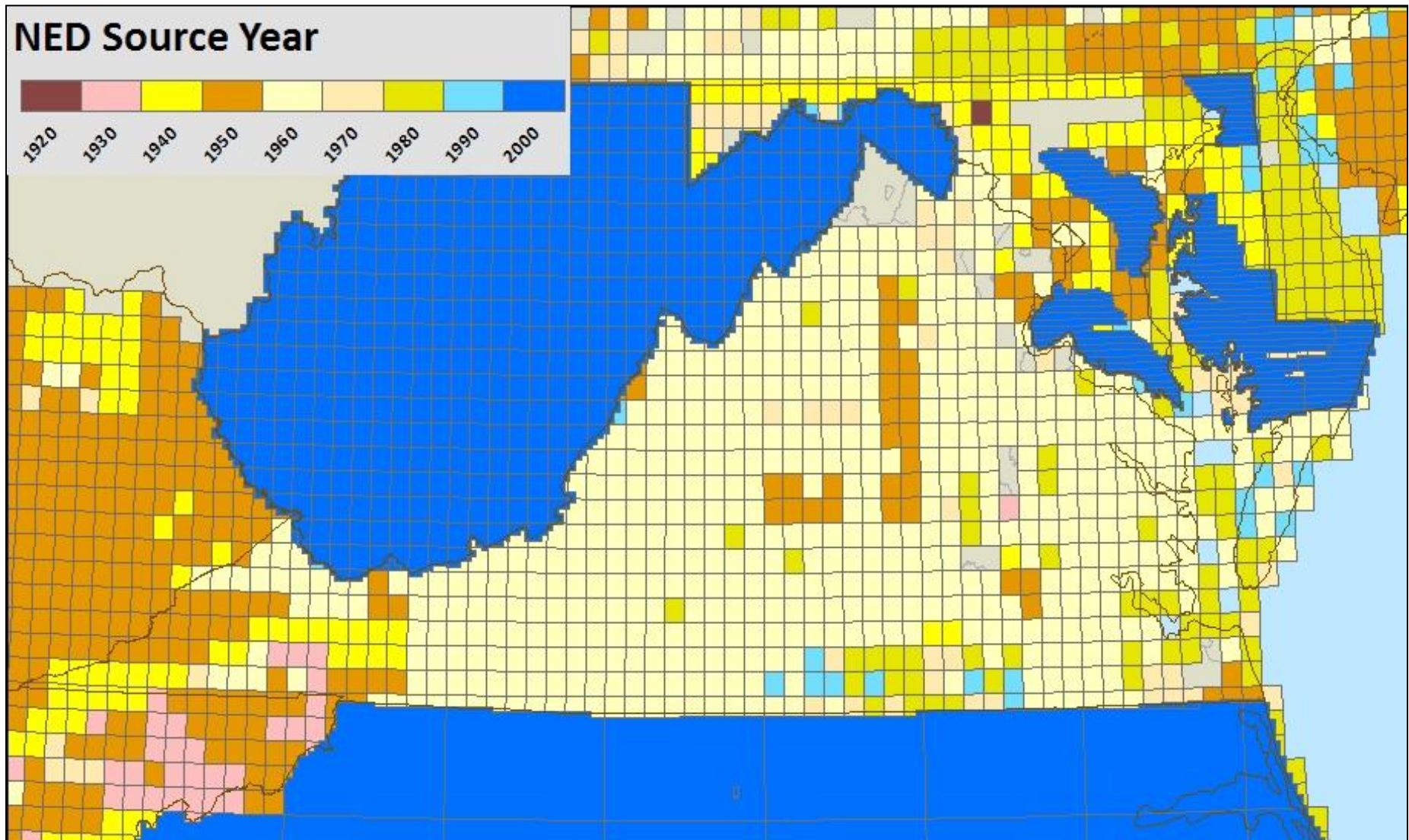
Terrains



National Elevation Dataset

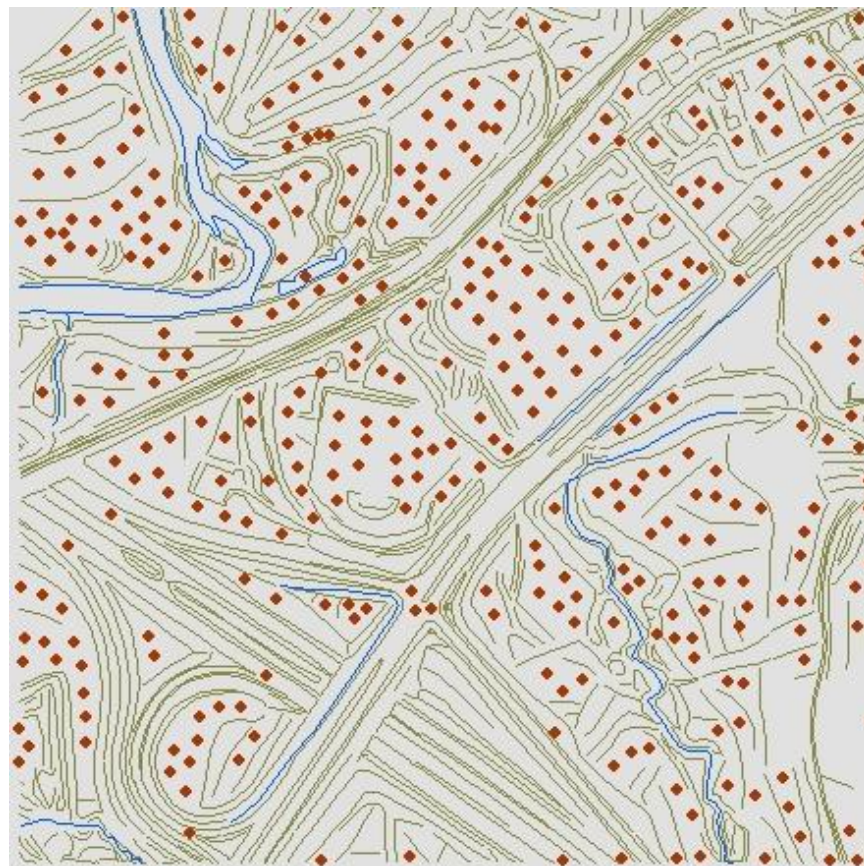
- 1997 completion
- Seamless grid of
 - 30 meter (1 arc-seconds)
 - 10 meter (1/3 arc-seconds)
 - 3 meter (1/9 arc-seconds)
- Overall vertical accuracy (RMSE) 2.44 m
- Source – Topographic quads



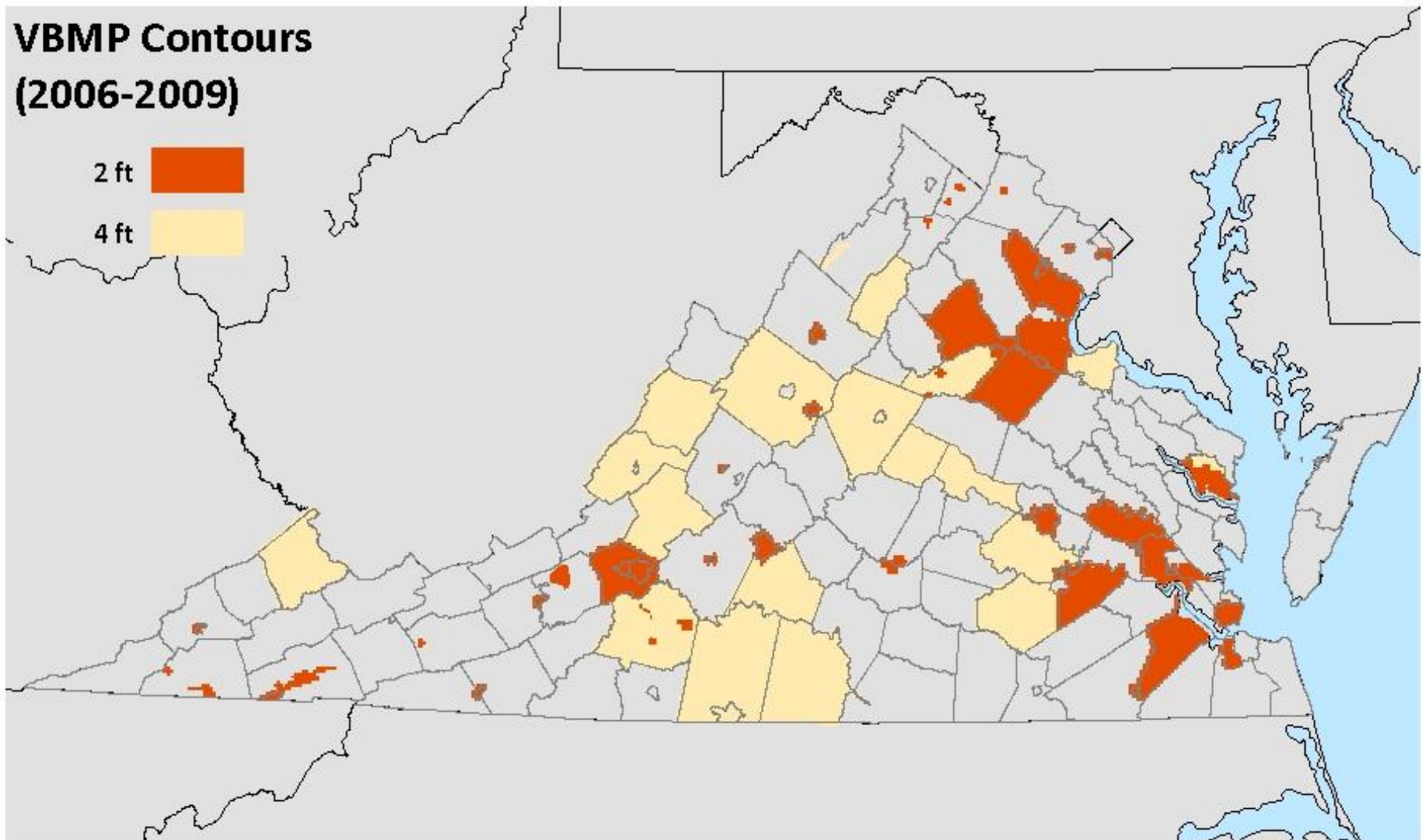


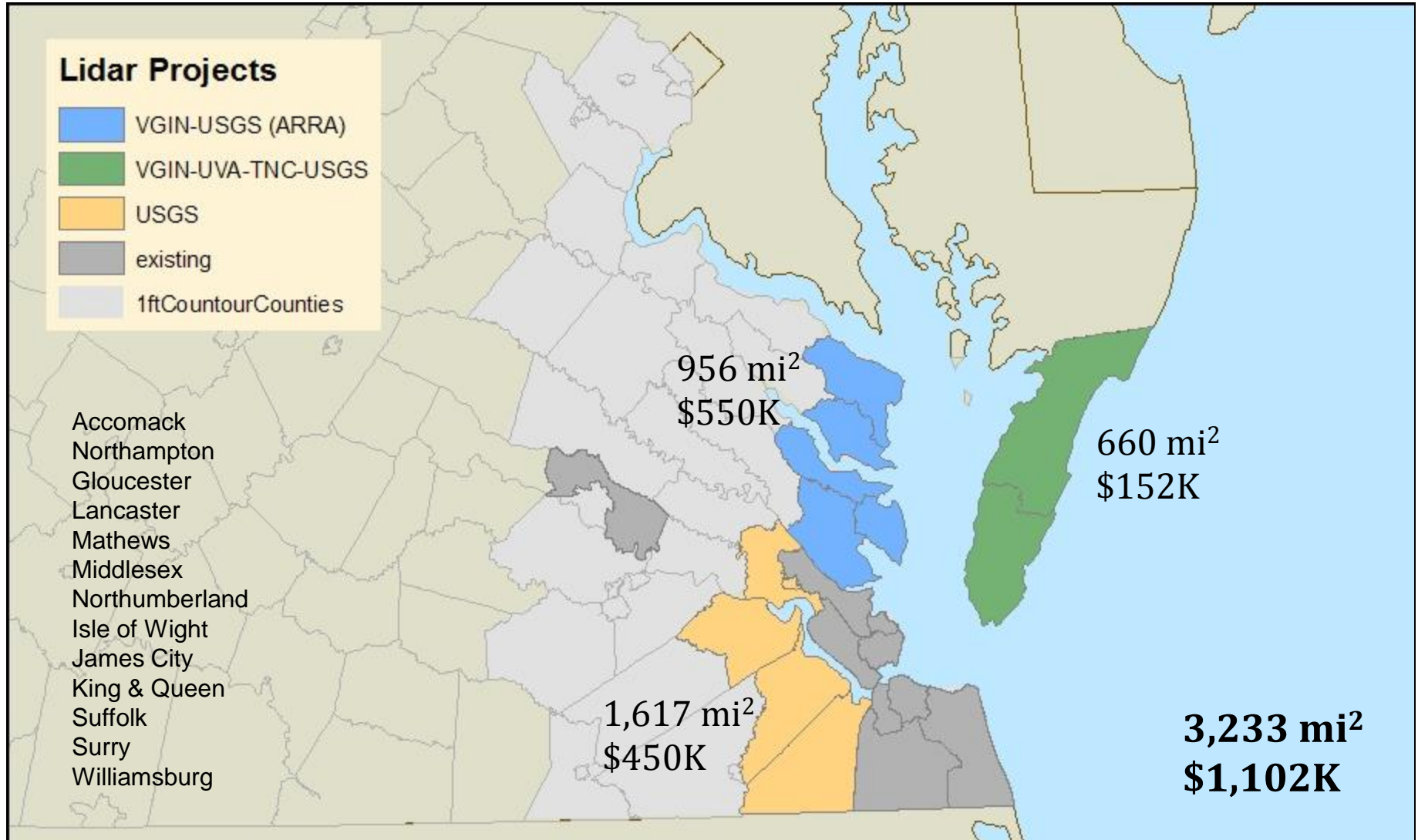
DTM & Contours from VBMP Ortho Program

- 2002, 2006, 2007, 2009
- Orthorectification
- DTM
- Derived contours



DTM – Digital Terrain Model





Clearinghouses



National Elevation Dataset

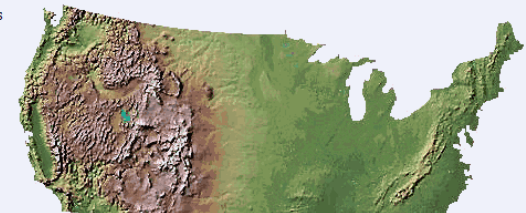
[Background](#) [Data](#) [Applications](#) [Research](#) [Publications](#) [FAQs](#) [Contact Us](#)

The National Elevation Dataset (NED) is the primary elevation data product of the USGS. The NED is a seamless dataset with the best available raster elevation data of the conterminous United States, Alaska, Hawaii, and territorial islands. The NED is updated on a nominal two month cycle to integrate newly available, improved elevation source data. All NED data are public domain. The NED is derived from diverse source data that are processed to a common coordinate system and unit of vertical measure. NED data are distributed in geographic coordinates in units of decimal degrees, and in conformance with the North American Datum of 1983 (NAD 83). All elevation values are in meters and, over the conterminous United States, are referenced to the North American Vertical Datum of 1988 (NAVD 88). The vertical reference will vary in other areas. NED data are available nationally (except for Alaska) at resolutions of 1 arc-second (about 30 meters) and 1/3 arc-second (about 10 meters), and in limited areas at 1/9 arc-second (about 3 meters). In most of Alaska, only lower resolution source data are available. As a result, most NED data for Alaska are at 2-arc-second (about 60 meters) grid spacing. Part of Alaska is available at the 1- and 1/3-arc-second resolution, and plans are in development for a significant improvement in elevation data coverage of the state.

The NED serves as the elevation layer of The National Map, and provides basic elevation information for earth science studies and mapping applications in the United States. Scientists and resource managers use NED data for global change research, hydrologic modeling, resource monitoring, mapping and visualization, and many other applications.

[The Seamless Data Distribution System \(SDDS\)](#) offers seamless data for a user-defined area, in a variety of formats, for online download or media delivery.

[Historic Digital Elevation Models \(DEMs\)](#) are now available.



[USGS Home](#)
[Contact USGS](#)
[Search USGS](#)

Bare-earth
DEM - NED
National
Elevation
Dataset
(USGS)

and Notices

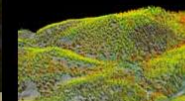


Welcome to the USGS Center for LIDAR Information Coordination and Knowledge

[Home](#) [Bulletin Board](#) [Data Viewer](#) [Websites/References](#) [Media & Docs](#) [Contact Us](#)

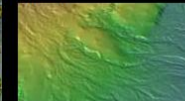
CLICK
Center for LIDAR Information Coordination and Knowledge

Discrete-return point clouds



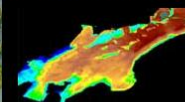
Find out more about discrete-return lidar: See if publicly available lidar is in your area of interest; ask and answer questions about the data; processing, derivatives and more on our bulletin board; look for articles and other websites about lidar.

Bare Earth



Find out more about the USGS bare earth derivatives from lidar: Go to our National Elevation Dataset (NED) page. NED contains bare earth elevation data created by lidar and other sources.

USGS-NASA-NPS EAARL Data



Find out more about USGS Coastal and Marine Geology Program's collaboration with NASA and NPS to publish data acquired by the Experimental Advanced Airborne Research Lidar (EAARL) system. Optionally, visualize and download lidar data and CIR imagery in Google Earth.



[USGS Home](#)
[Contact USGS](#)
[Search USGS](#)

Point-cloud data
CLICK

Previous Efforts

LiDAR Cost Benefit Analysis

- Led by Sam Hall
- August 2007 Summit
- Early 2008 Stakeholder Survey

87% used elevation

Survey Monkey



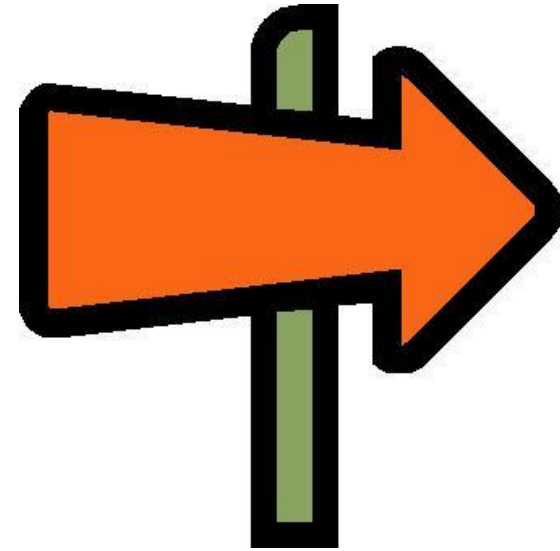
72% ↑ resolution

58% ↑ accuracy

46% ↑ currency

Business Objective (2008)

- Compile or acquire statewide elevation data that is of sufficient design, accuracy, and resolution to meet the business needs of the broadest possible stakeholder group in the Commonwealth of Virginia.
- These stakeholders include local, state, and federal government agencies, non-profit and non-governmental organizations, private sector businesses, and private citizens.



Elevation FIAT – Possible Tasks

- Conduct an **inventory** of existing elevation datasets
- Recommend elevation data **standards** and **best practices**
- Promote **coordination** and collaboration on the development of new elevation datasets
- Promote **data sharing** and incorporate elevation data in the existing clearinghouses

